# TECHNICAL REVIEW DOCUMENT for OPERATING PERMIT 960PM0168

to be issued to:

Tri-State Generation & Transmission Association

Nucla Station

Montrose County

Source ID 0850001

Cathy Rhodes December, 2001

#### I. PURPOSE:

This document will establish the basis for decisions made regarding the applicable requirements, emissions factors, monitoring plan and compliance status of emission units covered by the operating permit proposed for this site. It is designed for reference during the review of the proposed permit by the EPA, the public, and other interested parties. This narrative is intended only as an adjunct for the reviewer and has no legal standing. The conclusions made in this report are based on information provided in the original application submittal of February 23, 1996, August 30, 1998, January 15, 1999, and April 13, 2000.

Any revisions made to the underlying construction permits associated with this facility in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or an additional or revised Construction Permit.

#### II. SOURCE DESCRIPTION:

This facility is located in Nucla, Montrose County, Colorado. The area is classified as an attainment area for all pollutants. Utah is an affected state within 50 miles of the facility. There is one Federal Class I area within 100 kilometers of the facility, Black Canyon of the Gunnison National Park. In addition, Colorado National Monument, those portions of Black Canyon of the Gunnison not included as National Wilderness Area, and Uncompander and Wilson Mountain Forest Service Primitive Areas are Federal lands within 100 kilometers of the facility. These areas have been designated by the State to have the same sulfur dioxide increment as Federal Class I areas.

The entire plant is categorized as a major source for the Prevention of Significant Deterioration (PSD) provisions. The EPA issued a PSD permit for the entire facility on October 11, 1984. The PSD Permit addresses the new fluidized bed boiler which replaced three existing units. The PSD Permit only covers NO<sub>x</sub> and PM emissions. Emissions of other pollutants were reduced when the fluidized bed boiler replaced the existing units.

The Nucla Station consists of one atmospheric circulating fluidized bed (CFB) steam driven electric generating unit (Unit 4). Unit 4, with a rated electric generating capacity of 110 MW (gross), replaced three existing units in 1987. Unit 4 fires coal as the primary fuel. Propane is used as a start-up fuel. Four (4) baghouses control particulate matter emissions. Limestone is injected into the boiler to control sulfur dioxide (SO<sub>2</sub>) emissions. The inherent design of the boiler results in lower Nitrogen Oxide (NO<sub>x</sub>) emissions than conventional boilers. The unit is subject to the provisions of Title IV, the Acid Rain Program, of the Clean Air Act. Under Title IV, CFBs are not subject to a nitrogen oxide limit. In addition to the main boiler, the Nucla Station operates a propane fired auxiliary boiler, two cooling towers, and coal, limestone, and ash handling systems, as well as numerous insignificant activities.

The Potential-to-Emit data in the following tabulation of emissions are based on the Title V application. Actual emissions are based on AIRS data.

	POTENTIAL TO EMIT, TONS PER YEAR					
	PM	PM <sub>10</sub>	SO <sub>2</sub>	NOX	VOC	СО
B004 - Unit 4 Coal -Propane Startup	136	131	1599	1988	14	219
B005 - Auxiliary Boiler - Propane	neg	neg	neg	3	neg	neg
Coal Handling	16	5				
Limestone Handling	14	10				
Ash Handling and Hauling	32	17				
CT - Turbines 1,2,3	55	55				
CT - Turbine 4	14	14				
Total	262	231	1599	1991	14	219
Facility-Wide 1999 Actual Total Emissions	393	332	1476	1033	9	140

CT = Cooling Tower

#### **III. EMISSION SOURCES**

The following sources are specifically regulated under terms and conditions of the Operating Permit for this site:

# Unit B004 – Pyropower CFB – 1,112 mmBtu/Hr Firing Coal

**Applicable Requirements** - Final Approval Construction Permit 84MO120(1) was issued for this source. In addition, the EPA issued a PSD permit. Applicable requirements are as follows.

# Colorado Regulation No. 1

- Opacity shall not exceed 20% (Section II.A.1), except that no owner or operator of a source shall allow or cause to be emitted into the atmosphere any air pollutant resulting from the building of a new fire, cleaning of fire boxes, soot blowing, start-up, any process modification, or adjustment or occasional cleaning of control equipment, which is in excess of 30% opacity as measured by EPA Method 9 for a period or periods aggregating more than six (6) minutes in any sixty (60) consecutive minutes. (Section II.A.4)
- Particulate emissions shall not exceed 0.1 lbs/mmBtu (Section III. A.1.c)
- Continuous emission monitoring (Section IV)
- Continuous Opacity Monitor requirements (Section IV.B.1), when burning coal
- Continuous Emission Monitoring (CEM) for SO<sub>2</sub> or fuel sampling (Section IV.B.2)
- If CEM for SO<sub>2</sub> then CEM for either O<sub>2</sub> or CO<sub>2</sub> (Section IV.B.3)
- Calibration of CEMs (Section IV.F)
- Notification and Recordkeeping (Section IV.G)
- Recordkeeping duration (Section IV.H)
- Reporting requirements if fuel sampling (Section IV.I)
- Sulfur dioxide emissions shall not exceed 1.2 lbs/mmBtu, when burning coal (Section VI.A.3.a.(ii)), based on a 3 hour average. This limit applies to sources constructed before August 11, 1977. The regulation contains a limit of 0.4 lb/mmBtu for sources constructed or modified on or after August 11, 1977. The Division determined that when Unit 4 replaced the existing boilers, a reduction in SO<sub>2</sub> emissions occurred, therefore the 0.4 limit was not triggered, and the 1.2 limit still applies.

# Colorado Regulation No. 6, Part B (State-Only requirements)

Sulfur dioxide emissions not to exceed 0.4 lb/mmBtu (Section II.D.1.c - this
regulation does not set forth an averaging time, however, see discussion
under Construction Permit, below) - this limit is not applicable during periods
of startup, shutdown, or malfunction (40 CFR Part 60, Subpart A is
incorporated by reference into Regulation No. 6, Part B)

Colorado Regulation No. 8

Lead (Pb) emissions shall not be such that emissions result in an ambient lead concentration exceeding 1.5 μg/scm averaged over a one-month period (Reg 8, Part C) - This is a **State-only** requirement (Note: "ambient" air, for purposes of impact modeling, is considered to be air which the public has access to, and in this case, would be the impact off-property)

NSPS Subpart Da (40 CFR, Part 60, Subpart Da as adopted by reference in Colorado Regulation No. 6, Part A)

- Emissions of Particulate Matter shall not exceed 0.03 lb/mmBtu does not apply during startup, shutdown, or malfunction (*Note: Subpart Da also requires 99% reduction of the potential combustion concentration when burning solid fuel. The potential combustion concentration of PM is defined in NSPS Da, 60.41 (7 lbs/mmBtu for solid fuel). The Background Information Document, and Subpart Da, indicate that compliance with the percentage reduction requirement will be satisfied if the facility is in compliance with the 0.03 standard, thus the 99% reduction requirement is not included in this Operating Permit.)*
- Opacity shall not exceed 20%, except for one six-minute period of not more than 27% per hour - the limit does not apply during startup, shutdown, or malfunction
- 70% reduction of SO<sub>2</sub> emissions, 30 day average the limit does not apply during periods of startup, shutdown, or during emergency conditions (as defined in Subpart Da)
- NO<sub>X</sub> emissions shall not exceed 0.50 lbs/mmBtu, 30 day average the limit does not apply during startup, shutdown, or malfunction (*Note: Subpart Da also requires 65% reduction of the potential combustion concentration when burning solid fuel. The Background Information Document, and Subpart Da, indicate that compliance with the percentage reduction requirement will be satisfied if the facility is in compliance with the 0.50 standard, thus the 65% reduction requirement is not included in this Operating Permit.)*
- Source shall install, calibrate, maintain and operate continuous monitoring systems for measuring opacity, SO<sub>2</sub>, inlet SO<sub>2</sub>, and NO<sub>X</sub> emissions and either O<sub>2</sub> or CO<sub>2</sub> (Note: The CFB does not have add-on SO<sub>2</sub> control equipment, therefore the NSPS allows a fuel sampling program to be used instead of inlet SO<sub>2</sub> measurements)

# Acid Rain (Title IV) Requirements

The Code of Federal Regulations lists 1113 SO<sub>2</sub> allowances (as listed in 40 CFR 73.10(b)) for this source. Note that additional allowances can be obtained as needed per 40 CFR Part 75. The source will be allotted 1,122 allowances per year from 2000 to 2009 and 1,124 allowances per year from 2010 and beyond (as listed in the EPA's "Allowances Held Report," January 4, 1999).

- Acid rain permitting requirements per 40 CFR Part 72.
- Continuous emission monitoring requirements per 40 CFR Part 75.
- The source is also subject to the sulfur dioxide allowance system (40 CFR Part 73) and excess emissions (40 CFR Part 77).

# Construction Permit 84MO120(1)

- Limits Opacity to 20% (Note: The Construction Permit does not reference a specific regulation for this opacity limit. The operating permit corrects this oversight by including all applicable opacity limits and associated exceptions, such as the Regulation No. 1 30% provision, and NSPS startup, startup, shutdown, and malfunction provisions)
- Contains NSPS requirements
- 0.4 lb/mmBtu SO<sub>2</sub> limit is based on 30 day rolling average. Regulation No. 6 does not set forth an averaging time, however, to provide consistency in monitoring and reporting requirements, the Division determined that a thirty-day rolling average was appropriate, and included this averaging time in Construction Permit 84MO120(1).
- Contains emission limits for PM, PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>x</sub>, VOC, and CO emissions (Note: The VOC annual emission limit is revised from 59.9 to 13.7 tons/year, to reflect revised emission factor information)
- Limits coal consumption

#### **EPA Issued PSD Permit**

- PM emissions not to exceed 0.03 lb/mmBtu
- Limits Opacity to 20%
- NO<sub>x</sub> emissions not to exceed 0.50 lb/mmBtu, 30 day average CEM to be used to demonstrate compliance
- Requires excess emission notification, and defines when excess emissions are violations

The language in the EPA-issued PSD permit for this facility could be interpreted to indicate that the opacity, particulate, and NOx limits set forth in the permit were set as Best Available Control Technology (BACT) limits and apply at all times, including startup and shutdown. Following is a discussion of those requirements.

#### The PSD permit states that:

If the Administrator determines that the information submitted does not evidence unavoidable malfunction or upset condition, failure to meet limitations described in this permit will be considered a violation of the permit.

#### Opacity

In regard to the opacity limit, there is a reason that argues against interpreting the 20% opacity standard in the permit as a limit that applies at all times. The PSD program is an ambient air-based program. Although one could conduct sufficient Method 5 testing to develop a correlation between opacity and particulate levels at a specific emissions unit, this was obviously not done for any of the units addressed in the PSD permit. Therefore, establishing a BACT limit for opacity for this unit would not result in a direct, measurable impact in regard to ambient air standards. The Division does recognize that, in general, increased opacity is related to the performance of the control device as well as the particulate emission levels. Still, even if the 20% PSD permit limit is found not to apply, it would be supplanted only during startup, and even then the source would be subject to a 30% limit (Colorado Regulation No. 1).

However, the definition of BACT in 40CFR 52.21B)(12) states that it is "an emission limitation (including a visible emissions standard) based on...". Given this unambiguous language, the Division believes that, absent an alternate interpretation by the U.S. EPA, the 20% opacity limit in the PSD permit shall serve as a BACT limit that applies at all times, including during startup and shutdown.

Note that the PSD Permit limit will apply during some periods when the Regulation No. 1 limit does not (i.e., fire building, cleaning of fireboxes, soot blowing, process modifications and adjustments/cleaning of control equipment).

#### Particulate Matter

In regard to particulates, there are also two reasons that argue against interpreting the particulate standard in the permit as a limit that applies at all times. The PSD permit for this source uses the NSPS PM standard as the permit limit, although the NSPS may well have represented BACT at the time that the permit was issued. Nevertheless, the NSPS specifically exempts sources from meeting the PM standard during startup and shutdown, so if EPA believes that the NSPS technology cannot allow the source to meet the standards during startup and shutdown and this source has the same standard, it does not seem logical to conclude that this source was expected to meet the PM limits at all times.

In addition, the PSD permit states that compliance with the PM limit is via Reference Method 5. However, Part 60, 60.8(c) requires that performance tests be conducted under representative conditions and states that "Operation during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a performance test...." Therefore, it does not seem logical to have set BACT limits for PM since compliance could never be monitored using an EPA reference method test.

Despite the above discussion, there are two BACT determinations for PM in the EPA

Clearinghouse for coal-fired electric utility boilers prior to 1992 (both in Hawaii). Also, unlike opacity, PM emissions do have a direct relationship to ambient air standards.

Based on the above discussion, the Division believes that the particulate limits set forth in the EPA-issued PSD permit for the Nucla Station Unit B004 apply at all times, including startup and shutdown. The issues raised in the NSPS language do not necessarily carry over to the PSD program. However, it is clear that reference method testing during startup and shutdown may be problematic. Note that there are provisions in 60.8 for EPA to approve the use of alternative method for the performance testing. Since there are no continuous particulate monitoring systems currently approved by EPA for compliance monitoring purposes, good operating practices will serve as periodic monitoring to monitor compliance with the PM limit during startup and shutdown. Reference method stack tests will be used as periodic monitoring to monitor compliance with the PM limit during all other operational periods.

#### NO<sub>x</sub> emissions

Emissions during startup and shutdown must be included in determining the 0.50 lb/mmBtu, 30 day average.

Note that State regulations (Common Provisions, Section II.J.) do provide for an affirmative defense for excess emissions during periods of startup and shutdown when certain conditions are met.

Also note that Tristate asserts that the 0.03 lb/mmbtu particulate limit and the 20% opacity limit contained in the PSD permit issued by the U.S. EPA on October 11, 1984 do not apply during startup and shutdown.

### **Alternate Operating Scenarios**

The permittee requested the ability to dispose of spent boiler tube cleaning waste as an alternate operating scenario. Circulation of water through the boiler tubes results in an accumulation of mineral deposits over time. The mineral deposition decreases the efficiency of the heat transfer from the boiler tube to the circulating water. Periodically, the tubes are cleaned to recover the heat transfer efficiency. Operating experience for this utility has identified the need to clean the tubes approximately once every 10 years. The cleaning is accomplished by circulating cleaning solutions, generally strong acid and detergent mixtures, through the tubing. Commonly, the accumulated spent materials are slowly injected into an operating boiler for disposal. The permittee had previously requested to dispose of cleaning waste in the boiler, in March of 1993. At that time the Division agreed to the proposal, and determined a modification to the Construction Permit was not necessary. The permittee provided information regarding studies performed by the Electric Power Research Institute which indicates that disposal of cleaning wastes does not have a significant effect on operations or emissions. This has been an on-going practice for

other boilers operated by the utility and has not been cited by the Division as a compliance issue.

In addition, the permittee indicates that on a sporadic basis, they wish to combust non-hazardous petroleum contaminated soils and materials in the boiler. These materials are generated on occasions at the Nucla Station when accidental spills of petroleum liquids (lube oils and fuel) occur. Because of the expected small quantity of non-hazardous petroleum contaminated soils and materials generated, it is expected that introduction of such materials into the boiler for combustion will not cause the exceedance of any applicable emission limit or generation of pollutants not generated by routine operation of the boiler.

Finally, the permittee also wishes to use non-hazardous sandblast grit that has been expended during various maintenance activities, such as, boiler tube grit blasting, etc. as suspension material in its fluidized bed boiler during start-up. Although a very small percentage of the material may be discharged up the stack, most will be retained in the bottom ash hopper or captured by the baghouse and then will be transported to a landfill. The permittee will maintain a copy of the Material Safety Data Sheet for the gritblasting material in its files at all times for inspection by the Division.

Provisions for these three alternate operating scenarios are provided for in the Operating Permit.

**Emission Factors** -The combustion of coal in the boiler results in emissions of NOx,  $SO_2$ , PM, PM<sub>10</sub>, CO, VOC, and Pb. CEMs are used to determine compliance with emission standards and to estimate annual emissions of  $NO_x$  and  $SO_2$ . For PM and PM<sub>10</sub>, stack test results and monitored heat content of the fuel are used to determine compliance and estimate annual emissions. Standard factors from the AP-42 manual, or other emission factors/procedures acceptable to the Division, along with appropriate removal efficiencies for control equipment, are used to estimate VOC and Pb emissions. The CO emission factor is based on stack test data. VOC emissions may also be estimated using stack test data.

**Monitoring Plan** - CEMs are used to demonstrate compliance with the  $NO_x$  and  $SO_2$  lb/mmBtu limits. An annual (or less frequent, see next sentence) stack test and bagfilter maintenance plan are used to demonstrate compliance with the PM limits. The required frequency for PM stack testing can be reduced, depending on the test results in relation to the emission standard set forth in the permit. The heat content of the fuel is needed for these determinations. The heat input can be calculated from the carbon dioxide CEM required under the Acid Rain Program, or measured through a coal sampling plan, or vendor information.

Feeder integrators are used to measure the amount of coal combusted in the boiler. These data are used to demonstrate compliance with the annual coal limit.

Compliance with opacity limits is demonstrated using a COM.

To demonstrate compliance with the Regulation No. 8 Pb requirements, the permittee performed a one-time modeling exercise.

**Compliance Status** - The Division accepts the unit was in compliance at the time the Title V application was submitted.

# <u>B004 – S004 – 1,112 mmBtu/Hr Pyropower Circulating Fluidized Bed (CFB) Boiler – Startup Fuel - Propane</u>

Applicable Requirements - The permittee uses propane during startup of the boiler. Final Approval Construction Permit 84MO120(1) addresses propane fuel burning. In addition, the NSPS, Subpart Da, sets forth emission limits when fuels are combined for combustion. The permittee submitted information which indicates that, for the past five years, "alternative" fuels use has comprised less than 1% of total heat input. By calculation, the Subpart Da emission limits for this amount of propane remain essentially unchanged from the coal emission limit. The Division therefore assumes the source is in compliance with Subpart Da emission limits whenever alternative fuel use comprises less than 5% of total heat input. If alternate fuel use comprises more than 5% of total heat input during a year, the permit must be reopened to include Subpart Da requirements for combined fuel combustion.

Construction Permit 84MO120(1)

• Use of propane shall not exceed 1.3 x 10<sup>6</sup> gallons per year

**Monitoring -** The CFB boiler does not have a propane fuel meter. Fuel meters are used to measure the amount of propane combusted at other sources within the Nucla Station. The quantity of propane combusted in the CFB will be calculated based on the quantity of total propane consumed at the Nucla Station less the quantity of propane combusted by other emission sources at the Nucla Station.

**Compliance Status** - The Division accepts the unit was in compliance at the time the Title V application was submitted.

#### B005 Auxiliary Boiler – Cleaver Brooks 25.1 mmBtu/Hr Firing Propane

**Applicable Requirements** - This boiler is exempt from construction permit requirements because actual uncontrolled emissions are less than 5.0 tons per year, and it is located in an area classified as attainment. The exemption is based on consumption of propane not to exceed 250,000 gallons per year. The unit is therefore included in the Operating Permit,

to ensure the fuel limit is not exceeded. The boiler is subject to an opacity limit of 20% (Colorado Regulation Nos. 1.II.A.1 and 6, Part B, II.C.3), except during startup when opacity may not exceed 30% (Colorado Regulation No. 1.II.A.4). In addition, Colorado Regulation No. 6, Part B, III.C.3 limits opacity to 20%. Regulation No. 1.III.A.1 and 6, Part B, II.C.2 limit PM emissions on a lb/mmBtu basis, using the actual heat content of the fuel. The Regulation No. 6, Part B limits are **State-Only** requirements.

**Emission Factors** - Emissions from the auxiliary boiler result from burning propane. Standard factors from the AP-42 manual, or other emission factors/procedures acceptable to the Division, are used to estimate emissions.

**Monitoring Plan** - The auxiliary boiler operates for only a limited time each year, when the main boiler is not operating. A fuel flow meter will be used to monitor the quantity of propane combusted. Propane firing does not usually result in opacity problems. In the absence of credible evidence to the contrary, compliance with the opacity and lb/mmBtu PM limits will be assumed whenever propane is burned in the boiler. The word "credible" shall be applied under the provisions of this permit as defined by Colorado and Federal Rules of evidence.

**Compliance Status** - The Division accepts the unit was in compliance at the time the Title V application was submitted.

# P101 – 106 Coal Handling and Processing

The Nucla Station Coal handling system provides for receiving, transferring, storing, and preparing the coal before it is fed into the Unit 4 CFB boiler. Coal is delivered by truck on paved roads. Coal is unloaded to either the coal surge stock pile or the unloading hopper. Emissions are controlled with water sprays, as needed. Coal is then transferred to the crushers, and then conveyed to the transfer house. From the transfer house, coal is directed either to stackout and the stockpile or to the generation building. Coal undergoes final crushing, and then is transferred to temporary storage in silos before being fed to the boiler. Bagfilters control emissions from the final crushers and the silos. All conveyors are covered.

**Applicable Requirements** - The EPA included these activities in the PSD permit issued for Unit 4. In 1996, the permittee requested that all previously issued Final Construction Permits for these processes to be consolidated into a single permit. Initial Construction Permit 96MO742 was subsequently issued. Applicable requirements are as follows.

#### Construction Permit 96MO742

 Limits the amount of coal processed and the amounts of coal that can be stored. Note the PSD permit limits the amount of coal stored in the Main Stockpile to 50,000 tons. Construction Permit 96MO742 limits coal stored to 65,000 tons. The Division has determined that, since this increase in amount stored does not result in a significant increase in emissions, and therefore does not trigger PSD review, that the Construction Permit limit amends the PSD limit.

- Includes Regulation No. 1 opacity limits
- Limits PM and PM<sub>10</sub> emissions
- Sets forth measures to minimize fugitive PM emissions In addition, the PSD permit and the original Construction Permit required compaction of the coal surge stockpile. The permittee requested that this condition be removed from the Construction Permit and replaced with a watering requirement. Again, the Division considers this to be a minor modification, therefore the watering requirement supersedes the PSD permit compaction requirement.
- Includes NSPS requirements

# Regulation No.1.II.A.1 & 4

 Limits opacity to 20%, except that no owner or operator of a source shall allow or cause to be emitted into the atmosphere any air pollutant resulting from the building of a new fire, cleaning of fire boxes, soot blowing, start-up, any process modification, or adjustment or occasional cleaning of control equipment, which is in excess of 30% opacity as measured by EPA Method 9 for a period or periods aggregating more than six (6) minutes in any sixty (60) consecutive minutes.

(Note: These limits do not apply to fugitive particulate emissions (Colorado Regulation No. 1, II.8(iii)) - Colorado Regulation No. 3 defines "fugitive emissions" as "those emissions which could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening." The Division has determined that the emissions from the coal pile stackout lowering well, coal storage piles, truck unloading, and coal haulage are fugitive.)

Note: P106 - Final crushers, high angle conveyor, en masse conveyor, conveyor belts, and coal storage silos are vented through the boiler baghouse, therefore the Division has determined that the opacity limits for the boiler supersede the limits for P106 sources.

#### 40 CFR Part 60 Subpart Y, NSPS for Coal Preparation Plants

 The owner or operator shall not cause to be discharged into the atmosphere from any coal processing and conveying equipment, coal storage system, or coal transfer and loading system processing coal, gases which exhibit 20 percent opacity or greater.

#### **EPA Issued PSD Permit**

 Limits opacity from coal handling and storage to 20% - This standard applies at all times. See discussion under PSD permit for boiler, above, except that

- for coal handling, the EPA's RACT/BACT/LAER Clearinghouse DOES list opacity limits as BACT limits for coal handling activities.
- Sets forth measures for minimizing PM emissions The permit requires the
  use of water sprays with a chemical agent at the unloading station and all
  coal transfer points. The condition is revised to indicate that water sprays
  with a chemical agent shall be used as needed.
- Limits amount of coal stored

**Emission Factors** - AP-42 factors and equations and appropriate control measure/equipment control efficiencies, or other emission factors/procedures acceptable to the Division, are used to estimate PM and  $PM_{10}$  emissions.

**Monitoring Plan -** Belt scales monitor the quantity of coal processed by the primary coal crusher and the rotary breaker. Belt scales and feeder integrators monitor the quantity of coal processed by the coal handling system and the amount of coal on the main coal stockpile. Truck scales monitor the quantity of coal added to the coal surge stockpile. These monitoring records can be used to identify compliance with the coal handling limits. The emissions are calculated based on the amount of coal processed. A Method 9 opacity observation is performed by a certified observer at least semi-annually, for those sources indicated in the permit. An operation and maintenance plan shall be implemented for the baghouses. A monthly inspection is performed to ensure PM Emission Control Plan measures are in place. Compliance with the emission limits is monitored by meeting the consumption, baghouse maintenance, and Emission Control Plan requirements.

**Compliance Status** -The Division accepts these sources were in compliance at the time the Title V application was submitted.

### **P201 – 205 Limestone Preparation**

The limestone handling system provides for receiving, transferring, storage, and preparation of limestone before it is introduced to the Unit 4 CFB boiler. Limestone is delivered by trucks on paved roads. Limestone is unloaded to the storage pile or to the unloading hopper. From the hopper, limestone is transferred to an underground crusher and then conveyed to an enclosed bucket elevator which lifts the limestone to a storage silo. The silo feeds the pulverizer. Pulverized limestone is then transported to two silos located in the generation building. Bagfilters control emissions at the silos, unloading, crushing, and handling, and the pulverizer.

**Applicable Requirements** - The EPA included these activities in the PSD permit issued for Unit 4. In 1996, the permittee requested that all previously issued Final Construction Permits for these processes to be consolidated into a single permit. Initial Approval Construction Permit 96MO382 was subsequently issued. Applicable requirements are as follows.

#### Construction Permit 96MO382

- Limits the amount of limestone processed to 87,600 tons/year. The PSD permit does not specifically limit the amount of limestone processed, however, a permit condition states that the permittee shall operate the system in accordance with information supplied in the PSD application. The PSD analysis was based on 11,213 tons/year limestone. The Division has determined that, since the increase in the amount of limestone did not result in a significant increase in emissions, and therefore did not trigger PSD review, that the Construction Permit limit amends the PSD limit
- Limits PM and PM<sub>10</sub> emissions
- Includes NSPS requirements
- Sets forth a PM Emission Control Plan (The Plan includes the standard requirement from Regulation No. 1 that when operating off the property of the owner or operator, the applicable guidelines shall be no off-vehicle transport of visible emissions. This activity involves deliveries by vendors over which the permittee lacks control off-property, therefore this portion of the requirement is not included in the Operating Permit. In addition, one condition requires: "Emissions from material handling (i.e. removal, loading, and hauling) shall be controlled by watering at all times unless surface moisture of the material being handled and cleanliness of paved roads are sufficient to prevent emissions." This is revised in the Operating Permit to read as follows: "Emissions from hauling shall be controlled by watering as needed. Watering is not needed when surface moisture of the material being handled and cleanliness of paved roads are sufficient to prevent emissions." Addition of water to limestone causes the system to become plugged.)

#### Regulation No.1.II.A.1 & 4

 Limits opacity to 20% except that no owner or operator of a source shall allow or cause to be emitted into the atmosphere any air pollutant resulting from the building of a new fire, cleaning of fire boxes, soot blowing, start-up, any process modification, or adjustment or occasional cleaning of control equipment, which is in excess of 30% opacity as measured by EPA Method 9 for a period or periods aggregating more than six (6) minutes in any sixty (60) consecutive minutes.

40 CFR Subpart OOO, New Source Performance Standards for Nonmetallic Mineral Processing Plants

- Limits PM from stack emissions and from transfer points on belt conveyors to 0.05 gram per dry standard cubic meter
- Limits opacity to 0, 7 or 10 percent, depending on the type of process or equipment.

These emission and opacity limits do not apply during startup, shutdown, or malfunction

#### **EPA Issued PSD Permit**

 Requires PM emission control measures and limits opacity to 10% - This standard applies at all times. See discussion under PSD permit for boiler, above, except that for limestone handling, the EPA's RACT/BACT/LAER Clearinghouse DOES list opacity limits as BACT limits for limestone handling activities.

**Emission Factors** - AP-42 factors and equations and appropriate control measure/equipment control efficiencies, or other emission factors/procedures acceptable to the Division, are used to estimate PM and PM<sub>10</sub> emissions.

Monitoring Plan - Truck scales monitor the quantity of limestone delivered to the plant, unloaded at the limestone pile, and unloaded to the limestone truck unloading hopper. A belt scale is used to record the quantity of limestone taken from the stockpile and introduced to the limestone handling system. Records of annual limestone consumption limits, along with a baghouse inspection and maintenance requirements, serve to monitor compliance with the non-fugitive emission limits. Compliance with the fugitive PM limits is monitored based on the limestone throughput limits and use of the emission control plan. The Division initially considered requiring a stack test once per permit term (every 5 years) to monitor compliance with the 0.05 gram/dscf limit. The permittee performed the initial compliance tests for the NSPS in 1998. Average test results were an order of magnitude less than the standard, therefore the Division has determined that a baghouse operation and maintenance plan represents periodic monitoring for these sources, for the PM emission limit. Semi-annual Method 9 readings are used to demonstrate compliance with the opacity limit. In addition, a maintenance plan for the bagfilters is in place. A monthly inspection will be conducted to ensure the PM Emissions Control Plan is in place and effective.

**Compliance Status** - The Division accepts these sources were in compliance at the time the Title V application was submitted.

# P301 - P302 Ash Handling and Processing

The bottom ash handling system provides for the classification, removal, cooling, transfer, and storage of bottom ash generated by the Unit 4 CFB boiler. The system also provides for reinjection of the bottom ash from the storage silo back into the boiler for boiler startups. Bottom ash is removed from the boiler and cooled. A vacuum-type conveying system is used to transfer the ash to the bottom ash silo. A cyclone separator and pulse jet bagfilter separate the ash from the conveying air. Bottom ash is transferred to trucks for transport to offsite disposal.

The fly ash handling system provides for the removal, transfer, and storage of fly ash from the economizer, air heater and baghouse hoppers. Two independent vacuum-type pneumatic conveying systems transfer fly ash from collection hoppers to the fly ash silo. Two bagfilters control emissions. Fly ash is transferred to trucks for offsite disposal.

**Applicable Requirements** - The EPA included these activities in the PSD permit issued for Unit 4. In 1996, the permittee requested that all previously issued Final Construction Permits for these processes be consolidated into a single permit. Initial Approval Construction Permit 98MO0484 was subsequently issued. Applicable requirements are as follows.

#### Construction Permit 98MO0484

- Limits the annual amount of ash processed to 175,000 tons/year. The PSD permit does not specifically limit the amount of ash processed, however, a permit condition states that the permittee shall operate the system in accordance with information supplied in the PSD application. The PSD analysis was based on 116,333 tons/year ash. The Division has determined that, since the increase in the amount of ash did not result in a significant increase in emissions, and therefore did not trigger PSD review, that the Construction Permit limit amends the PSD limit
- Sets forth a PM emission control plan for minimizing PM emissions in connection with the landfill activities
- Limits PM and PM<sub>10</sub> emissions

#### Regulation No.1.II.A.1 & 4

 Limits opacity to 20% except that no owner or operator of a source shall allow or cause to be emitted into the atmosphere any air pollutant resulting from the building of a new fire, cleaning of fire boxes, soot blowing, start-up, any process modification, or adjustment or occasional cleaning of control equipment, which is in excess of 30% opacity as measured by EPA Method 9 for a period or periods aggregating more than six (6) minutes in any sixty (60) consecutive minutes.

#### **EPA Issued PSD Permit**

 Requires PM emission control measures and limits opacity to 10% - This standard applies at all times. See discussion under PSD permit for boiler, above

**Emission Factors** - AP-42 factors and equations and appropriate control measure/equipment control efficiencies, or other emission factors/procedures acceptable to the Division, are used to estimate PM and PM<sub>10</sub> emissions.

**Monitoring Plan** - Truck scales monitor the quantity of ash transported offsite. Semiannual Method 9 readings are used to demonstrate compliance with the opacity limit. In addition, a maintenance plan for the bagfilters is in place. Compliance with the processing limits and maintenance plan monitor compliance with the emission limits.

**Compliance Status** - The Division accepts these sources were in compliance at the time the Title V application was submitted.

# P303 – Ash Handling and Disposal

Trucks transport ash to the ash landfill for disposal. Fugitive PM emissions are generated from hauling, unpaved surfaces, ash unloading, and excavation and disposal activities.

**Applicable Requirements** - Final Construction Permit 87MO043(F) was issued for these activities. Applicable requirements are as follows.

Construction Permit 87MF043(F)

- Sets forth a Particulate Emissions Control Plan
- · Limits amount of ash processed
- Limits PM and PM<sub>10</sub> emissions

**Emission Factors** - Standard AP-42 equations and appropriate control measure/equipment control efficiencies are used to estimate PM and PM<sub>10</sub> emissions

**Monitoring Plan -** A quarterly inspection will be performed to ensure the PM emission minimization measures listed in the Control Plan are in place. Compliance with the emissions limits is monitored by meeting the control plan and process limit requirements.

**Compliance Status** - The Division accepts these sources were in compliance at the time the Title V application was submitted.

#### **Proposed Modification**

The permittee has submitted an application for Modification to Construction Permit 97MO043F. The modification is incorporated directly into this operating permit. The applicant proposes to expand the landfilling area. The existing disposal area is estimated to be closed in 2005. The application for this activity indicates construction activities for the expanded area will begin in 2002. Construction must commence within 18 months of permit issuance. Upon closure of the existing landfill, ash disposal will move to the expanded area.

The disposal rate and associated emission limit will remain the same as previously permitted. Emission increases are as follows (tons/year).

POLLUTANT	ACTUAL EMISSIONS*	POTENTIAL EMISSIONS*	INCREASE	PSD SIGNIFICANT LEVEL
Total PM	16.17	30.06	13.89	25
PM <sub>10</sub>	7.49	15.03	7.54	15

<sup>\*</sup>Actual emissions are based on the average actual emissions for 1999 and 2000. Potential emissions are requested permitted emission limits.

Emission increases are below the PSD significant emission increase thresholds, therefore PSD review is not applicable to this modification.

This modification does not result in any additional applicable requirements than those listed above, except for new construction notice requirements.

# P401 Cooling Tower Serving Turbines 1,2 & 3 P402 Cooling Tower Serving Turbine 4

The cooling towers dissipate waste heat transferred from the electric generation process. The cooling tower transfers heat to the atmosphere using evaporative cooling of the recirculating water. PM and small quantities of chloroform are emitted. Chloroform is produced as a byproduct of the introduction of chlorine in the recirculating water to control biological growth.

**Applicable Requirements** - Initial Approval Construction Permit 96MO703 was issued for these sources. Applicable requirements are as follows.

#### Construction Permit 96MO703

 Limits the amount of water circulated through the towers, based on the maximum design rate

- Drift loss is limited to .05% for S401 and .015% for S402
- Limits opacity to 20%.
- Limits PM and PM<sub>10</sub> emissions
- Requires weekly sampling for Total Dissolved Solid content

# Regulation No.1.II.A.1 & 4

• Limits opacity to 20% except that no owner or operator of a source shall allow or cause to be emitted into the atmosphere any air pollutant resulting from the building of a new fire, cleaning of fire boxes, soot blowing, start-up, any process modification, or adjustment or occasional cleaning of control equipment, which is in excess of 30% opacity as measured by EPA Method 9 for a period or periods aggregating more than six (6) minutes in any sixty (60) consecutive minutes.

**Emission Factors** - The maximum design circulating water flow rate, the cooling tower design drift rates, and the total dissolved solids content, as monitored, will be used to estimate emissions.

**Monitoring Plan** - The circulating water design limits listed in the permit are based on the maximum physical design limitation of the circulating water pumps for each of the cooling towers, therefore flow of water will not have to be monitored. Weekly samples of circulating water will be analyzed for total dissolved solids. These values will be used to estimate emissions. The permittee will operate, inspect, and maintain the drift eliminators according to manufacturer's recommendations. Records of the inspections and maintenance required in the permit will be maintained. In absence of credible evidence to the contrary, compliance with the PM and opacity limits shall be assumed when the operation, inspection, and maintenance of the drift eliminators is performed in accordance with manufacturer's recommendations.

**Compliance Status** - The Division accepts these sources were in compliance at the time the Title V application was submitted.

#### **III. Short Term Limits**

On April 16, 1998 the Colorado Air Quality Control Commission directed the Division to implement new procedures regarding the use of short term emission and production/throughput limits on Construction Permits. These procedures are being directly implemented in all operating permits that had not started their Public Comment period as of April 16, 1998. All short term emission and production/throughput limits that appeared in the construction permits associated with this facility that are not required by a specific State or Federal standard or by the above referenced Division procedures have been deleted and all annual emission and production/throughput limits converted to a rolling 12 month total. Note that, if applicable, appropriate modeling to demonstrate compliance with the

National Ambient Air Quality Standards was conducted as part of the Construction Permit processing procedures. If required by this permit, portable monitoring results and/or EPA reference test method results will be multiplied by 8760 hours for comparison with annual emission limits unless there is a specific condition in the permit restricting hours of operation.

The following table lists the short term limits that were included in the Construction Permits but not included in the Operating Permit.

Discontinued Short Term Limits Nucla Station	
Source	Short Term Limit
B004 - Unit 4 Boiler	33.36 lbs PM <sub>10</sub> emissions/hour 33.36 lbs PM emissions/hour 444.8 lbs SO <sub>2</sub> emissions/hour 556 lbs NO <sub>x</sub> emissions/hour 34 lbs CO emissions/hour 5.67 lbs VOC emissions/hour 139,000 lbs coal consumption/hour 6915 gallons propane/hour
B005 - Auxiliary Boiler	277 gallons propane/hour
P101 – 104 Coal Handling and Processing	Transfer of Coal from Truck to Hopper: 300 tons coal/hour  Primary crusher circuit: 2,500 tons coal/day  Rotary Breaker: 2,500 tons coal/day  Primary and Secondary crushers: 39.5 lbs PM/day and 17.0 lbs PM <sub>10</sub> /day  Transfer Points: 2,500 tons coal/day; 0.2 lb PM/day; 0.2 lb PM <sub>10</sub> /day
P201 -205 Limestone Preparation	75 tons limestone/hour 0.4 lb PM emissions/hour 0.3 lb PM <sub>10</sub> emissions/hour
P303 – Ash Hauling and Disposal	1200 tons ash/day 415 lbs fugitive PM emissions/day 208 lbs fugitive PM <sub>10</sub> emissions/day

#### IV. Miscellaneous

**Emission Factors -** From time to time published emission factors are changed based on new or improved data. A logical concern is what happens if the use of the new emission factor in a calculation results in a source being out of compliance with a permit limit. For this operating permit, the emission factors or emission factor equations included in the permit are considered to be fixed until changed by the permit. Factors dependent on the fuel sulfur content or heat content can not be fixed and will vary with the test results. The formula for determining the emission factors is, however, fixed. It is the responsibility of the permittee to be aware of changes in the factors, and to notify the Division in writing of impacts on the permit requirements when there is a change in factors. Upon notification, the Division will work with the permittee to address the situation.

**Final Approval for Construction Permits -** Some Construction Permits have not been issued Final Approval as of the date of this Operating Permit issuance. Since these pieces of equipment will have been in operation for more than 180 days by the due date of the first semi-annual monitoring report required by the operating permit, the Division will consider the Responsible Official certification submitted with that report to serve as the self-certification for Final Approval for these sources (unless self-certification was previously submitted).

**Accidental Release Program - 112(r) -** The Title V application reports the facility is subject to the provisions of the Accidental Release Plan provisions of 112(r)(7) of the Clean Air Act.

**Compliance Assurance Monitoring (CAM)** – At this time, no emission points at this facility are subject to the provisions of the CAM program as set forth in 40 CFR Part 64 as adopted by reference into Colorado Regulation No. 3, Part C, Section XIV. The application for this operating permit was deemed administratively complete prior to April 20, 1998. Therefore, emission points at this source will be reviewed for CAM applicability only upon the submission of a significant modification request (and then only for the emission point being modified) or upon renewal of the operating permit after the five-year expiration date.